

BIOHACK NOTES



BREATHING AND EXCHANGE OF GASES

- BASED ON ACTIVE RECALL AND SPACED REPETITION
- TARGET 360/360 IN NEET BIOLOGY & 100/100 IN BOARDS!



PARTH GOYAL



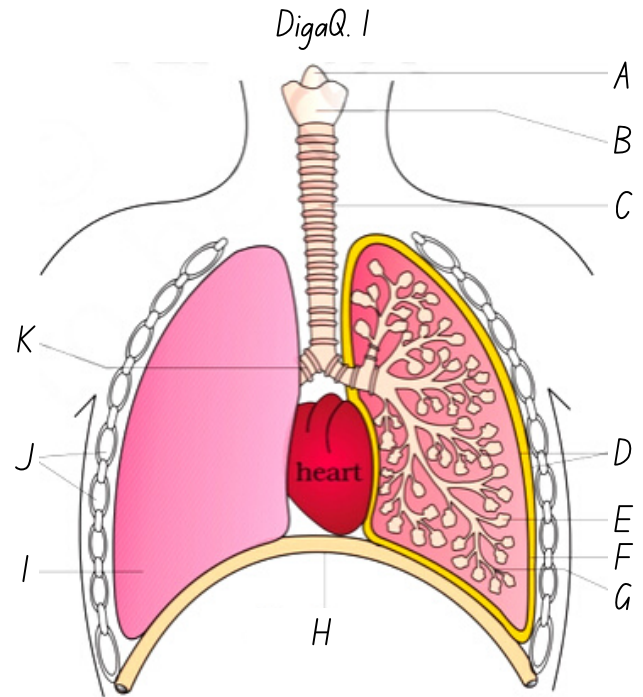


• RESPIRATORY ORGANS

1. Respiration through gills is called _____
2. Breathing by simple diffusion occur in (3)
3. Earthworm breath by _____
4. Insects have a network of tubes called _____
5. Gills are used by (3)
6. Frog can also respire through skin. T/F

• HUMAN RESPIRATORY SYSTEM

7. Nasal chamber opens into _____
8. Pharynx opens through _____ into _____
9. _____ is called the sound box.
10. Epiglottis prevent the food entry into _____ (NEET)
11. Trachea divides at the level of _____ thoracic vertebrae.
12. Name the structures which are supported by incomplete cartilaginous rings (5) (NEET)
13. Alveoli are irregular walled. T/F (NEET)
14. Pleura is single/double layered.
15. Pleural fluid fxn is - (NEET)
16. Conducting part end at -
17. Respiratory part is formed by (2) -
18. Fxn of conducting part is (4) -
19. The thoracic chamber is formed dorsally by _____, ventrally by _____, laterally by _____ and on the lower side by _____
20. Type II alveolar cell secrete _____ which reduce surface tension.



• MECHANISM OF BREATHING

21. Inspiration occurs when there is positive/negative pressure in lungs w.r.t atmosphere. (NEET)
22. Inspiratory muscles are (2) -
23. Increase in the volume of thoracic chamber in the antero-posterior axis is by _____ muscle.
24. Increase in the volume of the thoracic chamber in the dorso-ventral axis is by _____ muscle.
25. Muscles used in forceful expiration are (2) -
26. Breathing rate of healthy human is -
27. Negative/positive pressure breathing occurs in humans.
28. Negative/positive pressure breathing occurs in frogs.



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• RESPIRATORY VOLUME AND CAPACITIES

29. Which volume can't be measured by a spirometer ?
30. Which capacities can't be measured by a spirometer ?
31. TV is approx. _____ ml. (NEET)
32. IRV value is _____ ml. (NEET)
33. ERV value is _____ ml. (NEET)
34. RV Value - (NEET)
35. IC = _____ + _____ (NEET)
36. EC = _____ + _____ (NEET)
37. FRV value is _____ - _____ ml (NEET)
38. TLC include -



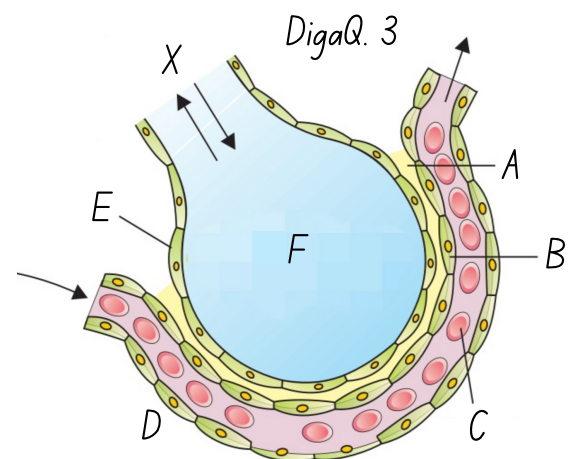
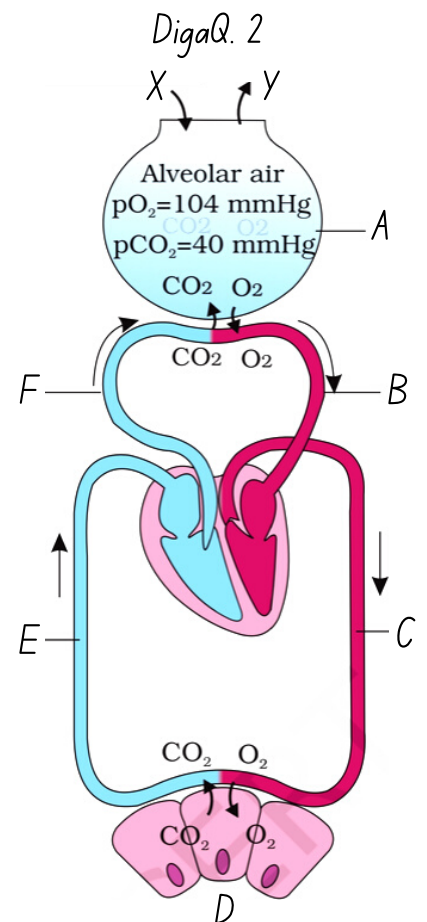
• EXCHANGE OF GASES

39. _____ are primary sites for exchange of gases. (NEET)
40. Rate of diffusion is affected by (3)
41. Partial pressure of O_2 in alveoli is - (NEET)
42. PP of CO_2 in alveoli is -
43. Partial pressure of O_2 in deoxygenated blood is - (NEET)
44. PP of CO_2 in oxygenated blood is -
45. PP of O_2 in tissues in -
46. Solubility of CO_2 is _____ times higher than that of O_2 .
47. The 3 layers of the diffusion membrane are -

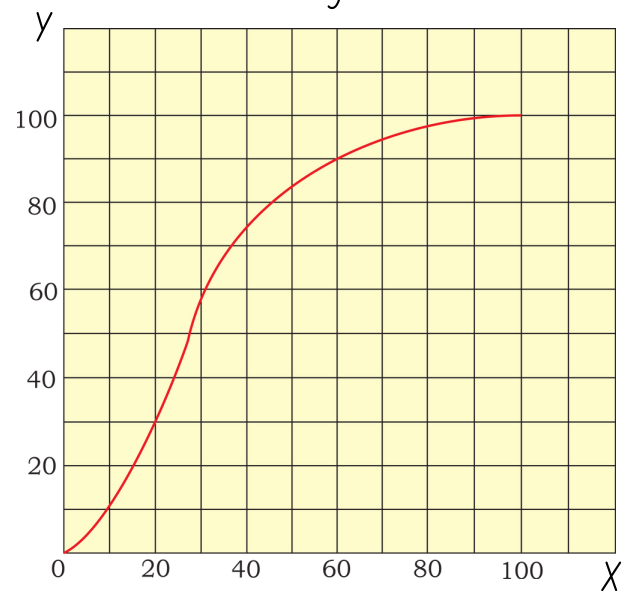


• TRANSPORT OF GASES

48. ____% of O_2 is transported by RBC.
49. ____% of O_2 is carried as a dissolved state in plasma. (NEET)
50. % of CO_2 carried as carbaminohaemoglobin is - (NEET)
51. % of CO_2 transported as dissolved form in plasma is - (NEET)
52. ____ % of CO_2 is carried as bicarbonate. (NEET)
53. Each haemoglobin molecule carries a maximum of 8 atoms of oxygen. T/F
54. Factors that interfere O_2 -dissociation curve is - (4)
55. Conditions of left shift are -
56. Conditions of right shift are -



57. Every 100 ml of oxygenated blood can deliver _____ ml of O_2 to tissues.
58. The major factor which affect pCO_2 and haemoglobin binding is -
59. CO_2 is carried as carboxyhaemoglobin in blood. T/F
60. Carbonic anhydrase is absent in plasma. T/F
61. Every 50ml of deoxygenated blood carries _____ ml of CO_2 to the alveoli.

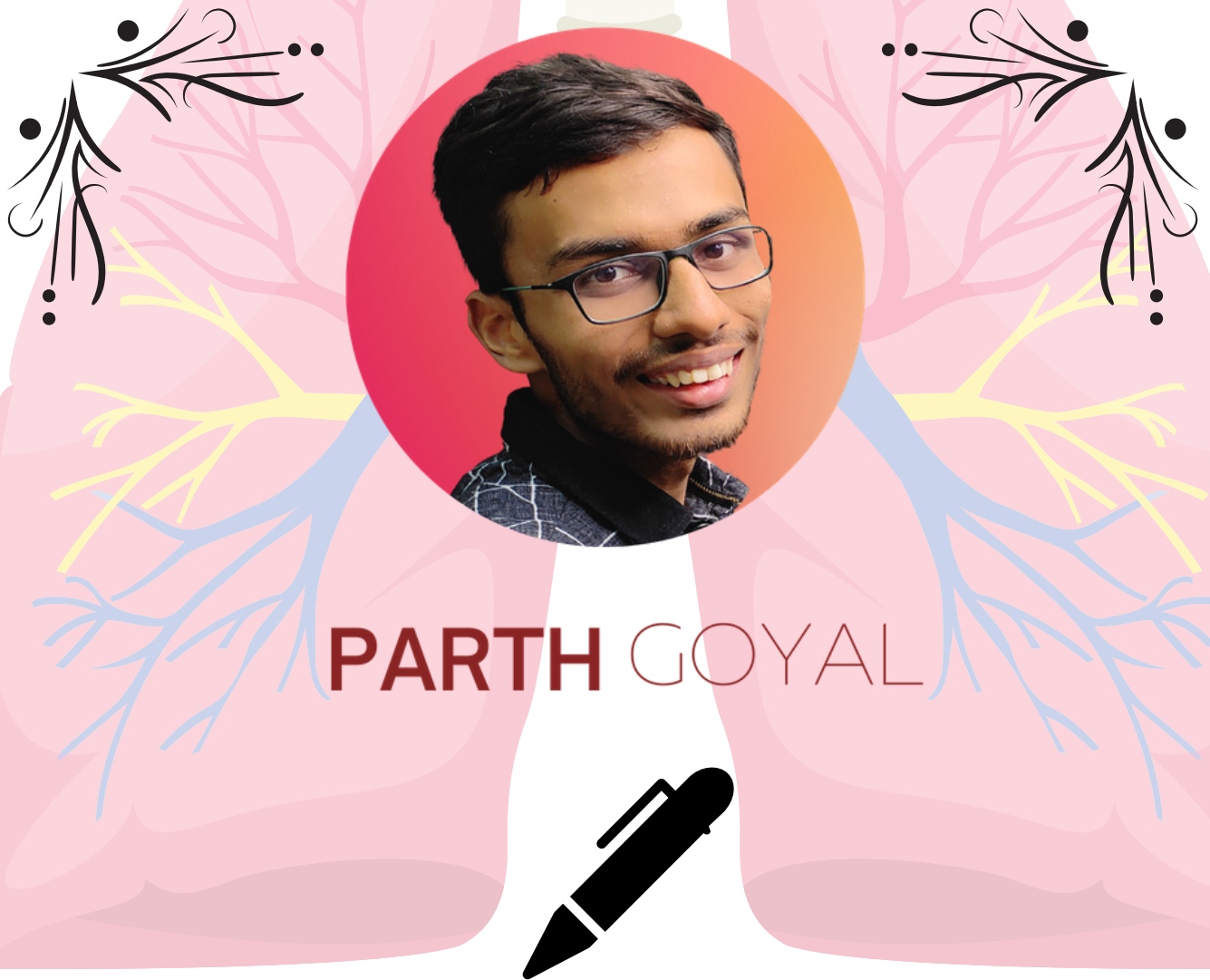


• REGULATION OF RESPIRATION AND DISORDERS

62. Respiratory rhythm centre is present in -
63. Centre present in pons is _____ which can moderate the functions of _____
64. Signals from which centre reduce the duration of inspiration ? (NEET)
65. A _____ area situated adjacent to rhythm centre is highly sensitive to _____ and _____ (NEET)
66. Receptors in _____ and _____ present peripherally recognise CO_2 and H^+ conc. (NEET)
67. Oxygen plays a major role in regulation of respiration. T/F
68. Difficulty in breathing causing wheezing due to inflammation of bronchi and bronchioles is called _____ (NEET)
69. Respiratory surface is decreased in _____ due to damage of _____ (NEET)
70. One of the major causes of asthma is cigarette smoking. T/F
71. Fibrosis occurs in -
72. Occupational Respiratory Disorders happen to people working in industries involved in - (NEET)
73. Examples of ORD are - (2)



BREATHING AND EXCHANGE OF GASES



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ANSWERS

• RESPIRATORY ORGANS

1. Brachial respiration
2. Sponges, coelenterates, flatworms
3. Moist cuticle
4. Tracheal tubes
5. Aquatic arthropods, molluscs and fishes
6. T

Human Respiratory System

7. Nasopharynx
8. Larynx to trachea
9. Larynx
10. Larynx
11. 5th
12. tracheae, primary, secondary and tertiary bronchi, and initial bronchioles
13. T
14. Double
15. Lubrication
16. Terminal bronchioles
17. Alveoli and their ducts
18. transports the air to alveoli, clears it from foreign particles, humidifies, brings the air to body temperature
19. Vertebrae, sternum, ribs, diaphragm
20. Lecithin (a surfactant)

• MECHANISM OF BREATHING

21. Negative
22. Diaphragm and external intercostal muscles
23. Diaphragm
24. External intercostal

25. Abdominal muscles & internal intercostal muscles
26. 12-16
27. Negative
28. Positive

Respiratory Volume And Capacities

29. Residual volume
30. FRC and TLC
31. 500 ml
32. 2500-3000 ml
33. 1000-1100 ml
34. 1100-1200 ml
35. TV + IRV
36. TV + ERV
37. ERV + RV so, 2100-2300 ml
38. IRV + TV + ERV + RV

• EXCHANGE OF GASES

39. Alveoli
40. Conc gradient, rate of diffusion, thickness of membrane
41. 104
42. 40
43. 40
44. 40
45. 40 (Hence, the trick to remember this table is, 1) Chalista (40s) is maintained always in the body 2) CO₂ PP will obviously be the same in tissues and deoxygenated blood)
46. 20-25
47. Thin squamous epithelium, endothelium of alveolar capillaries and basement membrane

| Respiratory Gas | Atmospheric Air | Alveoli | Blood (Deoxygenated) | Blood (Oxygenated) | Tissues |
|-----------------|-----------------|---------|----------------------|--------------------|---------|
| O ₂ | 159 | 104 | 40 | 95 | 40 |
| CO ₂ | 0.3 | 40 | 45 | 40 | 45 |

• TRANSPORT OF GASES

48. 97

49. 3

50. 20-25

51. 7

52. 70

53. T, 4 molecule qual 8 atoms

54. pO_2 , pCO_2 , H^+ conc, temperature

(Dipghosphoglyceric acid also, but it is not in NCERT)

55. Low temperature, Low H^+ conc, High pO_2 , Low pCO_2

56. High temperature, High H^+ conc, Low pCO_2 ,

Hlgh pO_2

57. 5 ml

58. pO_2

59. F, as carbaminohaemoglobin

60. F

61. 2 ml

• REGULATION AND DISORDERS

62. Medulla

63. Pneumotaxic centre, respiratory rhythm centre

64. Pneumotaxic centre

65. Chemosensitive, CO_2 and H^+

66. Aortic arch and carotid artery

67. F

68. Asthma

69. Emphysema, alveoli

70. F

71. Occupational Respiratory Disorders

72. Grinding or stone breaking

73. Silicosis and asbestosis

• DigaQs

DigaQ. 1 - Human respiratory system

A - Epiglottis

B - Larynx

C - Trachea

D - Pleural membranes

E - Alveoli

F - Pleural fluid

G - Bronchiole

H - Diaphragm

I - Lung

J - Cut end of rib

K - Bronchus

DigaQ. 2 - Exchange of gases

A - Alveolus

X - Inspired air

B - Pulmonary vein

Y - Expired air

C - Systemic arteries

D - Body tissues

E - Systemic veins

F - Pulmonary artery

DigaQ. 3 - an alveolus with a pulmonary capillary

A - Basement substance

B - Endothelium

C - RBC

D - Blood capillary

E - Squamous epithelium

F - Alveolar cavity

X - Air

DigaQ. 4 - Oxygen dissociation curve

X - Partial pressure of oxygen (mm Hg)

Y - Percentage saturation of haemoglobin with oxygen



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SCAN AND DONATE US SO THAT WE
CAN CREATE MORE SUCH QUALITY
CONTENT FOR YOU!

JUST ₹10-20 WILL BE APPRECIABLE! :)



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